Cornell Cooperative Extension | Cornell Vegetable Program

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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Unsolicited, Mislabeled Packages of Seeds Being Sent from China

New York State Department of Agriculture and Markets, 7/27/2020

Statement by New York State Commissioner of Agriculture Richard A. Ball:

"Our office has received questions from a few New Yorkers who have received unsolicited packages allegedly sent from China that are marked as containing jewelry but which actually contain plant seeds. Similar packages have been received in other states and the United States Department of Agriculture is investigating.

People who receive seeds should not plant or handle the seeds. *They should store them safely in a place children and pets cannot access and email USDA immediately at erich.l.glasgow@usda.gov for instructions. Seeds imported into the United States are rigorously tested to ensure quality and prevent introduction of invasive species, insects and diseases. We will continue to monitor this issue and will pass along guidance as it is received from USDA."*

NOTE: If you receive seeds, email USDA with your full name, telephone number(s), photos of the package, and any other relevant information.

Enrollees in the CCE Cornell Vegetable Program without access to email may call one of our Specialists and we will assist you in reporting it to USDA. Our phone numbers appear on the back cover of VegEdge newsletter.

People around the country are receiving unsolicited packages of seed coming from China. USDA is currently collecting seed packages from recipients and will test their contents and determine if they contain anything that could be of concern to U.S. agriculture or the environment. *Photo from Missouri Department of Agriculture*

About VegEdge

VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties.

The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

We're interested in your comments. Contact us at:
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Help us serve you better by telling us what you think. Email us at *cce-cvp@cornell.edu* or write to us at Cornell Vegetable Program, 480 North Main Street, Canandaigua, NY 14424.

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The next issue of VegEdge newsletter will be produced on August 5, 2020.

Farm Service Agency in NY to Host Meetings on Coronavirus Food Assistance Program

USDA, Farm Service Agency - New York, 7/27/20

The U.S. Department of Agriculture's (USDA) Farm Service Agency (FSA) in New York is hosting two meetings about the Coronavirus Food Assistance Program (CFAP). The first meeting will be Wednesday, August 5 at 7:00pm, and the second will be Thursday, August 6 at 10:00am.

The Coronavirus Food Assistance Program (CFAP) is available to farmers and ranchers whose commodity prices have been directly impacted by the coronavirus pandemic. CFAP provides direct relief to producers who faced price declines and additional marketing costs due to COVID-19. The meetings will highlight program information and discuss the application process.

Both meetings will present the same material, they are just being offered at two separate times to provide producers options on which to attend. The meetings will be available to attend online or with a conference call phone number. Please email Lynnette.wright@usda.gov to receive a calendar invite to the webinars, or follows these links at the appropriate times:

Weds, August 5 at 7:00pm, or call: 347-690-4420; Conference ID: 498 402 089#

Thurs, August 6 at 10:00am, or call: 347-690-4420; Conference ID: 478 383 664#

FSA is accepting applications for CFAP through Aug. 28, 2020. To find the latest information on CFAP, eligible crops, payment rates, application and payment calculator, visit farmers.gov/cfap.

Persons with disabilities who require accommodations to participate in this meeting should contact Lynnette Wright at (315) 477-6309 or Federal Relay Service at 1-800-877-8339, by August 4, 2020.

Sap Beetles Populations Building in Sweet Corn

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

These pests usually are more of a problem later in the summer but this season, sweet corn fields across the region have these insects already established. As populations increase, the threat of ear damage increases. Sweet corn varieties with poor tip leaf coverage or on ears that been damaged by birds are somewhat more prone to damage. Female beetles lay eggs on ears and in the emerging silks. The eggs quickly hatch and larvae move down into the ear tips and begin feeding. With the advent of the super sweet varieties, sap beetle feeding seems to have become more of problem. The insect feeding makes for an unsightly ear tip and can also lead to mold. Not very desirable for consumers.

Sap beetles and larvae on corn.
Photo by J. Obermeyer, Purdue University

Eggs are laid in silks as the silks emerge and larvae hatch about the time the silks start to wilt and dry. Scouting guidelines suggest observing the silk stage of the ear checking on 50 or more plants across a planting. This should be timed about 7-10 days before estimated harvest date. Look for adults sap beetles, and using a hand lens check for eggs or larvae. Count these and if there are at least 10% present then it is time to spray. Spray trial research out of the University of Maryland suggest the most benefit from applications made on the 3rd and 6th day of silking. Later sprays were not as effective.

There are several general products available to spray. Read the label directions as always but pay special attention to timing of applications. If worm management has been followed, pyrethroid products can reduce some of the sap beetle population. If populations are high or if worm/bird damage is present, using other products may be necessary. Assail 30SG, Hero, and Warrior II are some of the choices. When to spray silks/ear tips as larvae hatch is critical for reducing the damage. It is also very important to manage bird feeding as well. Any opening sap beetles can find will be exploited. Spray intervals should be tighter to hit new batches of larvae. Directed sprays to the ears using a forceful spray (may require more gallons of spray) to adequately get down into the ear area on the stalk. ●

NY Sweet Corn Trap Network Report, 7/28/2020

Marion Zuefle, NYS IPM Program; from http://sweetcorn.nysipm.cornell.edu

WNY Pheromone Trap Catches: July 28, 2020

Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	WBC	DD to Date
Batavia (Genesee)	NA	1	NA	1	0	84	2647
Bellona (Yates)	0	4	1	0	3	56	2662
Brockport (Monroe)	1	1	NA	3	1	0	2739
Eden (Erie)	0	1	NA	3	15	12	2656
Farmington (Ontario)	0	0	0	0	0	1	2733
Geneva (Ontario)	45	0	14	6	3	18	2669
Hamlin (Monroe)	0	0	NA	4	1	2	2635
Kennedy (Chautauqua)	NA	NA	NA	NA	NA	NA	2515
Leroy (Genesee)	4	3	NA	1	2	2	2629
Lyndonville (Orleans)	1	0	NA	1	1	128	2568
Oswego (Oswego)	0	0	NA	0	0	26	2416
Panama (Chautauqua)	0	10	NA	0	0	0	2360
Penn Yan (Yates)	0	0	0	0	0	1	2578
Portville (Cattaraugus)	0	0	NA	0	2	8	2331
Ransomville (Niagara)	0	1	NA	0	1	9	2671
Seneca Castle (Ontario)	0	0	0	0	0	2	2613
Williamson (Wayne)	0	0	NA	1	1	0	2465

ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm; NA: not available; DD: Degree Day (mod. base 50F) accumulation

Average Corn Earworm Catch			
Per Day	Per Five Days	Per Week	Days Between Sprays
<0.2	<1.0	<1.4	No spray (for CEW)
0.2-0.5	1.0-2.5	1.4-3.5	6 days
0.5-1.0	2.5-5.0	3.5-7.0	5 days
1-13	5-65	7-91	4 days
over 13	over 65	over 91	3 days

Add one day to the recommended spray interval if daily maximum temperatures are less than 80F for the previous 2-3 days.

Statewide, 35 sites reported this week. Twelve of the sites had European corn borer (ECB)-E and eleven sites had ECB-Z. Eighteen sites reported corn earworm (CEW) with thirteen high enough to be on a 4, 5 or 6 day spray interval. Fall armyworm (FAW) was caught at fifteen sites and Western bean cutworm (WBC) was caught at twenty-eight sites. The hybrid ECB moth was caught at three of the six reporting sites.

To determine the estimated flight prediction of the sweet corn sites, use the degree days in the table (left). Degree days were calculated using a base 38°F but not the upper threshold of 75°F. The degree days are therefore overestimated a bit.

WBC really went up this week, but there was an increase in trap catches for all the moths over the last 3 weeks. The table (next page) shows the estimated WBC flight completion based on Hanson et al. with a summary written by Dan Olmstead, NEWA coordinator.

Summary of Hanson et al. (2015) by Dan Olmstead:
A group from University of Minnesota published a revised method for predicting western bean cutworm flight periods in 2015. The older literature, commonly referred to as the 'Nebraska method' was published in 1976. The new method, referred to as the 'Hanson method,' noted WBC range expansion into Northern and Eastern US regions where suitable temperatures before the historical model start date of May 1 may occur.

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The Minnesota group used historical WBC black-light trap data from Nebraska to compare actual 25% flight completion dates with predicted values derived from a variety of candidate models having different lower and upper development thresholds using both simple and modified sine wave degree day calculations.

The best fit model proved to be one using a lower threshold of 3.3°C (38°F), an upper threshold of 23.9°C (75°F) and a simple daily degree day calculation.

NEWA Western Bean Cutworm Flight Emergence Lookup Table

	Hanson method (2015)[1,2]	
Est. Flight Completion	**Base 3.3°C**	**Base 38°F**
1%	1230	2200
5%	1320	2390
10%	1365	2460
15%	1390	2540
20%	1415	2585
25% (scout for egg masses)	1430	2615
30%	1450	2655
40%	1475	2690
50%	1500	2735
60%	1530	2800
70%	1560	2845
80%	1600	2919
90%	1660	3030
100%	2110	3825

[1] **Hanson, A.A., R.D. Moon, R.J. Wright, T.E. Hunt, and W.D. Hutchinson. 2015.** Degree-Day Prediction Models for the Flight Phenology of Western Bean Cutworm (Lepidoptera: Noctuidae) Assessed with the Concordance Correlation Coefficient. J. Econ. Entomol. 108:1728-1738. DOI: 10.1093/jee/tov110

[2] Model uses lower and upper thresholds of 3.3°C (38°F) and 23.9°C (75°F), respectively

Western Bean Cutworm Report, 7/28/20 – Numbers Jumped!

Margie Lund, Cornell Cooperative Extension, Cornell Vegetable Program

This week, Western bean cutworm (WBC) numbers have increased across the region with 7 sites surpassing 50 cumulative moths caught, including Avoca Hill and Valley, Caledonia S and SW, Geneva, Riga, and Stafford. Historically, peak flight for WBC is in the last week of July to first week of August. Both the trap reports and scouting corn in fields near dry beans can help determine the risk. Growers should scout adjacent corn fields when cumulative WBC have reached >50 moths per trap. Dry bean pod scouting should begin 7 to 10 days after peak emergence, regardless of cumulative WBC trap catch, and especially where WBC has been found in bean pods/seeds in recent years. This scouting should continue for three weeks.

Western bean cutworm (WBC) trap set date and WBC adult numbers by date for each dry bean trap location.

Dry Bean Location	7/7/20	7/14/20	7/21/20	7/28/20	Cumulative WBC
Avoca Hill (Steuben Co.)	0	0	23	67	90
Avoca Valley (Steuben Co.)	1	0	6	44	51
Caledonia S (Livingston Co.)	0	0	6	54	60
Caledonia SW (Livingston Co.)	0	0	8	100	108
Geneva (Ontario Co.)	0	2	13	38	53
Riga (Monroe Co.)	0	1	24	49	74
Stafford (Genesee Co.)	1	1	18	41	61
Wayland (Steuben Co.)	0	2	4	24	30

Project funded by the NYS Dry Bean Endowment

To scout for WBC, inspect 50 plants per field (10 stops, 5 plants per stop), looking at all pods present on the plant for holes. WBC chew directly into the pod and eat the seed. It can be difficult to scout dry beans for egg masses or caterpillars, since the caterpillars move from the pods to the soil during the daytime, so looking for signs of damage is the best strategy. European corn borer damage (ECB) may be similar to WBC, but an ECB larva would likely still be present in the pod when inspected. If damage into the pod and seed is found with no larva present, it is possible this is WBC. A spray is recommended if dry bean pod damage is found. In addition, to the WBC traps listed in the sweet corn report, dry bean trap sites are being monitored this year (see table).

Progression of Stemphylium Leaf Blight

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

Stemphylium leaf blight (SLB) disease of onion causes:

1. Colonization of necrotic leaf tissue, characterized by a tan or brownish coloring of necrotic leaf tissue, resulting in a "dirty" appearance.
2. Target-spot lesions that typically occur on necrotic tissue.
3. Excessive leaf dieback. Once 30% leaf dieback is exceeded, plants usually go on to "die standing up" instead of lodging properly, which can result in reduced bulb size and storability (due to inability to properly administer sprout inhibitor), and increased bacterial bulb rot.

Initially, SLB behaves like a secondary pathogen. It invades necrotic tissue of leaf tips and outer leaves, as well as necrotic tissue caused by injury such as from harsh weather or post-emergent herbicides. Although unnerving, SLB colonization of injured tissue when onion are pre-bulbing tends to stay within the necrotic tissue and eventually disappears as

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these leaves slough off the plant. After bulbing, movement of SLB from injured necrotic tissue to healthy tissue seems more risky. Generally, it is not until onions have about 1.5-2" bulbs, tipburn of 2" or more, outer leaf dieback and thick canopies with reduced aeration that we see SLB start to become a primary pathogen. Of course, prolonged or frequent periods of leaf wetness are also more favorable for disease development. Below are eight stages of SLB progression from first detection of colonization of leaf tips (="dirty tips") to plants dying standing up. **During Stage 3 is when we believe SLB becomes a primary pathogen.** This is based on experience gained from several years of scouting onions and evaluating SLB fungicide trials.

STAGE 1

Tan-colored colonization of necrotic leaf tip tissue (no distinct lesions). May also occur on necrotic tissue of outer leaves that are dying back.

STAGE 2

Tan and black-colored colonization of necrotic leaf tip tissue (no distinct lesions). May also occur on necrotic tissue of outer leaves that are dying back.

STAGE 3

Tan/brown-colored target-spot SLB lesions on necrotic tip and outer leaf tissue. **Primary infection begins.**

STAGE 4

Tan/brown-colored colonization/target spots on necrotic tissue with some black target-spot lesions.

STAGE 5

Black and/or purplish target-spot lesions are common on necrotic tissue.

STAGE 6

Any color of target-spot lesion, especially black or purple on green tissue.

STAGE 7

Black and/or purple target-spot lesions, in addition to excessive leaf dieback (30% or more).

STAGE 8

Plants die "standing up" and do not lodge. Plants that die standing up are at greater risk for bacterial bulb rot.

SLB AS A SECONDARY PATHOGEN

Brown colonization of necrotic tissue injured by herbicide with tan/brown colonization and target-spot lesions beginning to develop. Often, SLB remains in injured necrotic tissue and eventually disappears when the injured leaves slough off.

All photos by C. Hoepting, CVP

Controlling Corn Earworm in Sweet Corn, Part 2: Crafting Fresh Market Spray Programs

Elizabeth Buck, Cornell Cooperative Extension, Cornell Vegetable Program

To recap last week's article (Vol. 16, Iss. 16, 7/22/20, page 3), corn earworm (CEW) control is not straightforward because of multiple influx waves of adults, overlapping pest stages and generations, the influence of pest population on control efficacy and the appropriate spray interval, resistance concerns, and economics. Five different mode of action groups provide control of corn earworm. Here's a quick summary of what's registered and some pros/cons.

Insecticide Group	Registered Materials (*restricted use pesticide)	Notes
1a - Carbamates	Sevin Lannate*	Environmentally harsh.
3a - Pyrethroids	bifenthrin* lambda-cyhalothrin* permethrin*	Many more pyrethroid options. Economical. Resistance occurs.
5 - Spinosyns	Blackhawk Radiant Entrust	Best for larvae; little adult activity.
28 - Diamides	Coragen* Beseige*	Beseige is a premix of 3a+28
Biocontrol - Virus	Gemstar LC Helicovex	For low to moderate pressure.

BASIC FACTS RELATED TO CRAFTING A SPRAY PROGRAM - CEW

- Migrates to NY in several waves each summer, typically starting in late June.
- Lays eggs on green silk only. Protect corn from silk emergence to dry down, a 10-14 day window.
- Eggs are nearly impossible to spot. Use a pheromone trap to monitor adult flights.
- Generation time is fluid and averages about 1 month. In hot weather, a generation may take 3 weeks. Cool fall weather slows larvae development.
- Has 1 or 2 locally produced generations, depending on arrival time.
- Pressure peaks around or after Labor Day.
- Is poorly controlled by Bt products, except for Vip3a traited GMOs, which give excellent control.
- Is exposed to pyrethroids all spring and summer as they migrate north. Resistance risk increases as the season progresses.
- That is tolerant to one pyrethroid tends to be tolerant to all pyrethroids.

WHAT GOES INTO A SUCCESSFUL CEW SPRAY PROGRAM?

A successful season-long spray program must control CEW, avoid resistance-related control failures, and be economically prudent. **The goal is to expose each generation of CEW to a new chemistry (mode-of-action group number), to reduce generational selection pressure exerted by pyrethroids, and to spray no more than is necessary - use trap counts!** The economic advantages of pyrethroids lead to their widespread use. While not ideal, pyrethroids can be used as a backbone of a spray program so long as they are rotated once each generation AND **as long as they continue to give good control. When rotating, make two or three consecutive applications of the different material to all silking corn on the farm.** Rotating away from pyrethroids also reduces the chances of aphid and spider mite flair-ups caused when too much pyrethroid use kills off their natural enemies. **Using the minimum number of rotational sprays will encourage the development of pyrethroid resistance on your farm, especially if moths have been exposed to a lot of pyrethroids before arriving in NY.** You can choose to rotate products more frequently on your farm than is outlined in the examples here. If pyrethroids fail to give control, select from the other materials available or call a Fresh Market Vegetable Specialist for help developing a new program. Of course, the best spray program is one hand-crafted to your own unique farming situation and local pest population. **ALWAYS FOLLOW THE LABEL.**

EXAMPLE PROGRAMS

Each example program (Fig. 1) is just that – an example. None of these have been evaluated as full spray programs in a research settings. They are built based on the biology of the pest and trial results from experiments studying single product efficacy. These scenarios assume that there is not an overwintering population** of CEW present on-farm and assumes first arrivals in late June. I also assume that CEW will have a single 3 week generation time occurring somewhere in mid-July to mid-August. I'm assuming constantly building CEW pressure that will necessitate a 5-6 day spray interval in late- June and early July, a 4-5 day interval from mid-July to mid-August, and a 3-4 day interval in late August to mid-September. In real life pressure will wax and wane based on arriving moth flights and your success in limiting development in the field. Accordingly, the spray intervals will stretch or contract based on local trap counts.

**Note that there CEW is known to overwinter in areas of Erie and Onondaga counties and periodically can overwinter elsewhere in NY during mild winters. Overwintering populations pose a higher risk of pyrethroid tolerance and necessitate more diverse chemical rotations.

ORGANIC CEW PROGRAM

Preventative: Avoid planting corn or minimize production of corn grown for harvest after Labor Day. Try to use season extension techniques to **shift a greater proportion of production into high-value, early season markets that will silk when CEW pressure is low.** Invest in a corn earworm trap, learn how to monitor it, and check the counts weekly (excellent support materials available at NYS IPM Center or Cornell Coop. Extension). Thoroughly destroy (chop/break up/incorporate) crop residue after harvest.

Reactive: Viruses can reduce a CEW population but they only work on larvae. Larvae must eat the virus before they disappear into the ear. Good coverage targeting the ear is important. The first application of the year can be made to susceptible stage corn shortly after the first moths are caught. Multiple applications may be necessary to cover the entire 10-14 day silking window. Successful use of a virus will stop larval feeding activity a few days before infected larvae die. **When trap counts indicate a tighter spray window** (ie >7 moths/week = 4 day window), consider using **an application of Entrust** to target larvae.

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CONVENTIONAL CEW PROGRAM, NO SPRAY LICENSE

Preventative: See organic preventative controls. **Consider growing GMO Vip3a traited Bt corn (Attribute II series) for silking windows after early-August.**

Reactive: In addition to the organic controls and listed in order of increasing expected efficacy, growers without a spray license can use Eight (a low-dose permethrin, 1 day PHI), Sevin (2 day PHI), and any of the Group 5 products. Blackhawk (1 day PHI) may be the most economical choice among the group 5 products. **Eight or virus alone can be used when CEW first arrives** and pressure is between 2 and 4 moths/week. **In late July or early August**, about a month after you first began treating with pyrethroids, rotate away and treat all silking corn with **Sevin for two to three consecutive sprays**. After you can return to the previous program if pyrethroids were giving sufficient control. If the pyrethroids weren't working, stick with Sevin. Consider adding virus to either Sevin or Eight to increase efficacy. Three to four weeks after the initial rotation (**late August**) rotate to **two to three consecutive applications of Blackhawk** or another Group 5 product. The Group 5 product will be your rescue material if you experience overwhelming pressure at any point in the year but avoid using it as your main material.

CONVENTIONAL CEW PROGRAM, SPRAY LICENSE

Preventative: Invest in a pheromone trap. Consider shifting from very late to very early corn if capturing high, shoulder-season prices is part of your corn growing business strategy.

Reactive: Pyrethroids can be the backbone of your program but overuse will increase likelihood of control failures. In **June and early July**, you could consider trying out a virus on its own when pressure is low (< 3 moths/week) or in combination with a pyrethroid when pressure is moderate (4-7 moths/week). **In July, about a month after you began spraying**, rotate to **two to three consecutive applications of a Group 5 material**. At this point in the season, pressure should be low and there should be fewer overlapping stages within the field. The majority of adults should be from newly arriving influxes and not from larvae that escaped control in June. Group 5 materials don't treat adults and so could be a good fit here between pyrethroids to target larvae. Any escaping larvae will mature in 3-4 weeks. In early August any escaping larvae from mid-July will be adults, intermixed with arriving adults. **The early August rotation could be to Beseige**. Although Beseige is not a true chemical rotation because it contains a pyrethroid, it is attractive because it can offer some control over both adults and larvae. You'll be better off in September if you can take out both stages now. The higher rate of Beseige will deliver as about as much active ingredient per acre of the Group 28 component as a single application of Coragen. Additionally, repeating a group 5 in early August could expose two subsequent generations (offspring of the mid-July escapes) to the same rotational material and should be avoided. I think **returning to the Group 5 for the September rotation** is the better play. In September you only need to control larvae, and products like Blackhawk to well with larvae. In consideration of resistance management, the CEW population will have been exposed to two other modes of action before receiving a second round of a Group 5 chemistry. One **alternative arrangement** to avoid repeating any rotational modes of action and potentially reduce costs would be to start the rotational scheme in **mid-July with Sevin, then Beseige in early August, and finish up with Blackhawk** in September.

CONVENTIONAL CEW PROGRAM, SPRAY LICENSE & GMO ACCEPTING MARKETS

Preventative: Invest in a pheromone trap. Plant Vip3a traited Bt varieties for silking windows after mid-August to avoid late season CEW spraying.

Reactive: Pyrethroids can be the backbone of your program. In **June and early July**, you could consider trying out a virus on its own when pressure is low (< 3 moths/week) or in combination with a pyrethroid when pressure is moderate (4-7 moths/week). In **July, about a month after you began spraying**, rotate to **two consecutive applications of Beseige**. This is not a true rotation away from pyrethroids but is an economical choice. Applying Beseige at the high label rate will maximize the rotational effect of the Group 28 component and is expected to be less expensive than applying an identical rate of the active ingredient using the non-premixed Group 28 product Coragen. Sevin could be used as an alternative to Beseige to provide a lower cost, true chemical rotation when pressure is not high. However, Sevin is harsh environmentally, has a longer PHI (2 days) and generally is not favored by larger fresh sweet corn market growers. **Three to 4 weeks later** (depending on heat), **in early August** rotate away from pyrethroids entirely and **apply a Group 5 material for two consecutive sprays.** This will target larvae, not adults. Blackhawk may be a material of interest economically. You can use pyrethroids so long as they continue to perform well through the end of August. If you need to make an application in **late August or September rotate to Beseige** to pick up control on both adults (pyrethroid component) and excellent control of young larvae (Coragen, group 28 diamide component) in the high pressure conditions. **Vip3a traited corn** should not require treatment unless pressure is extraordinarily high, well over 100 moths/week.

Figure 1. Examples of potential spray rotation programs for corn earwom control on various types of fresh market farms. Rotations are set up based on silking windows and approximate corn earworm generation times, starting from the first typical arrival time in NY. Each rotational spray should be applied on two consecutive spray dates to all silking corn present on the farm. Always follow the label.

	Silking Window								
CEW Program	**June**	**Early July**	**Mid July**	**Late July**	**Early Aug.**	**Mid Aug.**	**Late Aug.**	**Early Sept.**	**Mid Sept.**
Organic	Virus alone	Virus alone	Virus alone	Virus alone	Group 5	Group 5	Group 5	--	--
Conventional, no spray license	Group 3a	Group 3a	Group 3a + virus	Group 1a	Group 3a + virus	Group 3a + virus	Group 5	--	--
Conventional, no spray license + GMO	Group 3a	Group 3a	Group 1a or 5	Group 3a + virus	Group 3a + virus	Vip3a GMO	Vip3a GMO	Vip3a GMO	Vip3a GMO
Conventional license (ex. 1)	Group 3a	Group 3a	Group 5	Group 3a	Group 28	Group 3a	Group 3a	Group 5	Group 3a
Conventional license (ex. 2)	Group 3a	Group 3a	Group 1a	Group 3a	Group 28	Group 3a	Group 3a	Group 5	Group 3a
Conventional license + GMO	Group 3a	Group 3a	Group 28	Group 3a	Group 5	Group 3a	Vip3a GMO	Vip3a GMO	Vip3a GMO
Conventional - when the pyrethroids stop working	Virus alone	Group 1a	Group 5	Group 5	Group 28	Group 28	Group 1a	Group 5	Group 5

CROP INSIGHTS

GENERAL

Flash flooding associated with very heavy rainfalls is obviously not great for crops and can promote a generalized outbreak of foliar and root disease. Specifically, fields with known histories of phytophthora blight can be expected to have a flare up once the soils desaturate. Pythium fruit rots can also strike vine crops following flooding (see photo). A generalized protectant fungicide would be a good move once fields dry out.

Night temperatures in other regions are forecast to dip into the upper 50's low 60's. Temps in that range combined with dewy nights can start promoting end-of-summer diseases like anthracnose of tomato, alternaria of brassicas, and downy mildew of onions.

The spider mites don't seem to mind that it has been (slightly) cooler and we've gotten some rain. They're having a party in a number of crops including tomato, corn, melon, cukes and eggplant. - EB

Pythium Fruit Rot on zucchini found in a field that had recently experienced significant flooding. *Photo: C. Tucker, CVP*

BEETS

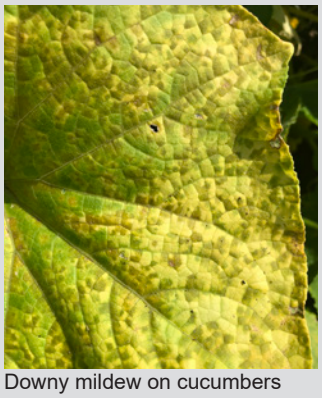
Cercospora leaf spot (CLS) is the major disease to manage for the remainder of the season. The forecast for CLS shows a moderate risk for CLS through the weekend. A fungicide application is generally only warranted if you need to keep the tops healthy for top pulling and the crop still has several weeks until harvest. The CLS threshold is an average of one lesion per leaf. For conventional growers, the most efficacious products labeled for CLS on table/garden beet are Tilt and Miravis Prime. A second spray, if warranted, should rotate with a different class of products such as Merivon, Luna Tranquility, or Double Nickel. For organic production, the most efficacious products in our research trials are Double Nickel + Cueva, and Lifegard. Please contact Julie if you need assistance with CLS management. - JK

CARROTS

Continue to scout for leaf spot diseases. The biggest leaf disease concern for late season is Alternaria leaf blight because the disease can blow up quickly. Alternaria first appears as dark brown to black irregular spots on the margins of the leaflets. Lesions on the petioles and stems are dark brown and girdle the stems, killing them. As the disease progresses, entire leaflets may shrivel and die. Lesions are more prevalent on older foliage. Cercospora leaf spot may also be present, although it is more prevalent in hot and humid weather. Cercospora lesions are small, circular, tan or gray spots with a dead center which appear along the leaf margins, causing them to curl. The Cercospora fungus attacks younger leaves. Bacterial lesions are small yellow areas on the leaflets with brown, dry centers which are often surrounded by a yellow halo. While sprays with Bravo fungicide (group M5) will control both Alternaria and Cercospora, rotation with a fungicide with a different mode of action is advisable for resistance management. Quadris (group 11) or Quadris Opti (group 11 + M5) control both fungi and also have a 0 day PHI. There are several other fungicides labeled for carrot and outlined in the 2020 Cornell guidelines. Choices should be based on what you are trying to control, cost, and PHI. - JK

CUCURBITS

In the past week I've seen or received photos of downy mildew, powdery mildew, bacterial wilt, fusarium wilt, suspected verticillium wilt, alternaria, anthracnose, angular leaf spot, bacterial leaf spot, phytophthora blight, pythium fruit rot, cucumber mosaic virus, and suspected WMV or ZYMV viral infections. Fair to say to that at the very least protectant fungicides should be in play. - EB



Downy mildew on cucumbers is continuing to spread in the region. *Photos: C. Tucker, CVP*

Anthracnose of yellow squash. Circular sunken spots will appear on fruit and may be a quarter to a half inch in size.

DRY BEANS

Potato leafhopper pressure is still high in many fields, with both adults and nymphs feeding on leaves. High numbers of leafhoppers can lead to hopper burn and decreased yields. In fields treated with Cruiser, the presence of nymphs indicates that Cruiser is no longer working. - ML

EGGPLANT

Two Spotted Spider Mite (TSSM) populations continue to escalate. Eggplants can tolerate a fair level of TSSM, but in hot, dry seasons such as 2020 they can limit yield, and contaminate neighboring crops. Challenges for TSSM in eggplant include a dearth of non-restricted use materials and long PHIs. Acramite (group 20D) is non-restricted and has a 3 D PHI, but is limited to 1 application per season. Agrimek (group 6) is a 7 D PHI. In our experience multiple applications are required to control the ongoing hatches and development. We do have farmers reports that the release of predatory mites is effective and economical in eggplant fields. This would create an organic option, but not just for organic growers! - JR

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LETTUCE AND GREENS

Basil downy mildew is present in Erie County. It puts a yellow band on the foliage and there will be gray-to-brown spores on the undersides of the leaves in humid conditions (see photos). Cases caught early can be treated with Revus, Ranman, Quadris, or phosphorous acid type fungicides. - EB

Basil downy mildew can be spotted by looking for light yellow patches on leaves (left). Turn the leaf over and you'll find the leaf covered in fluffy gray-purple spores (right). *Photos: C. Tucker, CVP*

ONIONS

Thrips pressure has been high on several fresh market farms lately and bacterial rots is unsurprisingly present in sweet onion plantings. Cases of purple blotch are occurring and some stemphylium is beginning to take hold on weakened tissue. Fresh market onions, including sweets, should be scouted as preserving foliage from thrips and disease now leads to increased bulb size and quality later. - EB

Figure 1. When onions have 1.5-2 inch bulbs and at least 2 inches of tipburn is typically when we start tos see Stemphylium leaf blight develop more rapidly. Note the brown and black colonization of SLB beginning to invade the leaf tips. Within the canopy, target-spot lesions can be found on necrotic outer leaf tissue. *Photo: C. Hoepting, CVP*

Where did the season go? The first loads of early transplanted varieties were harvested last week. Most direct seeded fields are at 1.5-2 inch bulbs with early-maturing varieties beginning to lodge. Although not without a lot of diligence in some cases, thrips and leaf diseases remain under control.So far, there have not been any reports of downy mildew. A protectant should be used to prevent downy mildew, which most commonly include mancozeb, FRAC 11 or P07. It is at the 1.5-2 inch bulb stage when plants have at least 2 inch of tipburn (Fig. 1) that Stemphylium leaf blight (SLB) can really start to move from a backseat position as a secondary pathogen into the front seat as a primary pathogen – see article on SLB progression on page 4. Managing SLB of onion is a balancing act between using too much fungicide (and increasing risk of fungicide resistance) and too little (which risks letting disease reach uncontrollable levels), and applying them too late (and not being able to control disease) or too early (and wasting fungicide applications). Three main approaches are breaking out:

1. Careful spray program planning that preserves the most effective FRAC 3 and 7 fungicide sprays for when disease pressure is expected to be highest (e.g. last 3-4 sprays in August). This is most common for varieties with longer days to maturity (110 or more).
2. Positioning best SLB sprays ahead of symptom development (target-spot lesions) in hopes that SLB will remain low enough that spray program may be finished off with non-FRAC 3 or 7 fungicides such as Bravo.
3. Only 1-2 applications of FRAC 3 fungicides (typically co-applied with insecticides), while Bravo is used for other sprays. This has worked for early-maturing varieties where the crop is made prior to heavy SLB pressure. For example, fields that are at 20% lodging in July that have relatively clean leaf tips and outer necrotic leaves are not going to die standing up in two weeks, even with no additional fungicide applications. Whereas, a field that is at 20% lodging on August 25 that already has SLB target spots and 20% leaf dieback could die standing up within 2 weeks, as SLB pressure is much higher then.

The best fungicide sprays for SLB, according to 2019 on-farm fungicide trials include:

1. Quadris Top 14 fl oz (FRAC 3) + Tilt 8 fl oz (FRAC 3)
2. Luna Experience 10 fl oz (FRAC 3 + 7)
3. Inspire Super 20 fl oz (FRAC 3 + 9)
4. Luna Tranquility 16 fl oz (FRAC 7 + 9)
5. In Elba only - Scala 9 fl oz + Rovral 1 pt (FRAC 9 + 2)

Generally, fungicides with good SLB activity are also effective on Purple Blotch. - CH

PEPPERS

European corn borers will drill into pepper fruit up, often up near the stem. The corn trap data can help pepper growers gauge risk by tracking the flights of adult moths. Bacterial spot continues across the region. Treat it with a high rate of copper and try to reduce plant stress. Don't save any stakes from a bacterial pepper field! - EB

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POTATOES

This week, all stations have reached or are within 3 Blight Units (BU) of the 30 BU threshold. A BU of 30+ indicates the need to spray for late blight. The chart assumes use of a susceptible potato variety, and an application of chlorothalonil. Forecast BUs are subject to changes as the weather forecast changes, so check forecasting tools regularly to see if disease forecasts have changed. Information for other weather stations can be found on NEWA's website. On a national level, late blight has still only been reported in FL, AL, and NC. The most recent late blight reported in NC was determined to be the US-23 genotype. No late blight has yet to be reported in NYS. - ML and JG

New Late Blight Risk Chart, 7/28/20

Location	Blight Units[1] 7/22-7/28	Blight Units[2] 7/29-7/31	Location	Blight Units[1] 7/22-7/28	Blight Units[2] 7/29-7/31
Albion	21	13	Hammondsport	6	12
Arkport	31	13	Knowlesville	25	12
Baldwinsville	14	13	Lyndonville	23	14
Bergen	16	13	Medina	28	13
Buffalo	16	13	Niagara Falls	34	18
Burt	19	12	Penn Yan	23	12
Ceres	46	19	Rochester	33	12
Elba	25	13	Sodus	NA	NA
Fairville	16	13	Versailles	35	14
Farmington	24	12	Wellsville	47	13
Fulton	25	14	Williamson	17	13
Geneva	22	12			

[1] Past week Simcast Blight Units (BU)
[2] Three-day predicted Simcast Blight Units (BU)

SNAP BEANS

Hot weather in July coupled with intense storms has caused stress in snap beans. Some fields have flooded or have wet spots where beans have died from roots being saturated with water. Fields with a history of white mold and dense canopies are most at risk for developing white mold (for control strategies, see the article in last week's VegEdge). Beans are also still at risk for bacterial diseases (which seem to be prevalent in other crops as well this season), Pythium crown rot, and even *Phytophthora capsici*. Please let us know if you need assistance with disease identification. Potato leafhopper populations remain high across the state. Spider mite populations may also build on snap beans. We are looking for snap bean fields with escapes of lambsquarters for an herbicide resistance assay project. Please contact Julie if you have such fields - JK

SWEET CORN

Need help identifying worms/caterpillars? The NYS IPM Program has a fact sheet on Larval Pest Identification in Sweet Corn, which can be found online at https://hdl.handle.net/1813/57328. If you need a print copy and/or assistance in insect identification, please contact one of us. - JK

TOMATOES

Disease levels remain low in field tomatoes but continue to monitor the potato and Late Blight sections of this newsletter. Flea beetles and thrips are found sporadically, along with the occasional Colorado Potato Beetle. Blossom End Rot may be the most common tomato problem now. This water-stress induced calcium deficiency can occur at any point during fruit development. The damaged fruit is often not discovered until it changes color. Remove these and inspect immature fruit. Irrigation may need to increase, however the damage likely occurred weeks ago. - JR

Coronavirus Producer Action Survey

Cornell Agricultural Workforce Development

The coronavirus continues to cause disease, market disruptions, and employment turmoil throughout the country. Farms continue to operate as essential businesses, adopting many new management practices intended to slow or halt the spread of the virus. Cornell Agricultural Workforce Development is conducting a survey to measure the extent farmers have taken actions to prevent the spread of the coronavirus and COVID-19, the disease it can cause. The purpose is to provide accurate information for farm managers, educators, and decision-making authorities.

Access the survey here: COVID-19 Producer Action Survey

PURPOSE OF THE SURVEY

1. Measure adoption of the coronavirus prevention actions on farms.
2. Gather accurate information for farmers, educators, and decision-makers.

BENEFITS FOR PRODUCERS

1. Receive a copy of the summary results
2. Compare own actions to that of others
3. Survey is straightforward and only takes 10-15 minutes to complete

All information entered will be kept confidential. Only aggregate data, with no way to identify farms or individuals, will be published or shared. No financial compensation is provided to participants, but a summary of the results will be shared if you contribute a usable survey and include a working email address.

For questions, contact: Lucas Smith (ls678@cornell.edu or 315-759-8188) or Richard Stup, Ph.D., Cornell Agricultural Workforce Specialist, (rstup@cornell.edu or 607-255-7890).

Cornell Agricultural Workforce Development's mission is to help farms and agribusinesses build committed and effective teams who will carry out the important work of feeding the world. We believe that agricultural work can, and should be, engaging and rewarding for everyone involved. Managers can build committed teams by applying the best human resource management practices for the agricultural setting.

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

WEEKLY WEATHER SUMMARY: 7/21/20 - 7/27/2020

	Rainfall (inch)		Temperature (°F)	
Location**	Week	Month July	Max	Min
Albion	3.39	6.47	88	60
Arkport	0.44	2.14	88	58
Bergen	0.31	4.51	88	60
Brocton	0.52	4.80	83	63
Buffalo*	0.42	3.20	86	66
Burt	0.17	1.00	90	58
Ceres	0.25	4.49	85	59
Elba	1.18	4.73	85	59
Fairville	0.20	2.44	89	57
Farmington	0.26	4.79	88	59
Fulton*	0.06	3.48	90	59
Geneva	0.30	2.99	88	62
Hammondsport	0.28	1.67	91	60
Hanover	1.00	3.84	84	61
Lodi	0.28	1.79	90	64
Niagara Falls*	0.21	1.63	89	62
Penn Yan*	0.34	2.75	93	60
Rochester*	0.16	5.29	87	62
Sodus	NA	NA	NA	NA
South Bristol	0.61	3.30	88	73
Varick	NA	NA	91	63
Versailles	0.50	2.44	84	60
Williamson	0.19	3.12	88	59

ACCUMULATED GROWING DEGREE DAYS (AGDD) BASE 50°F: APRIL 1 - JULY 27, 2020

Location**	2020	2019	2018
Albion	1527	1334	1602
Arkport	1319	1225	1596
Bergen	1494	1287	1510
Brocton	1468	1313	NA
Buffalo*	1551	1324	1673
Burt	1429	1193	1455
Ceres	1274	1288	1388
Elba	1435	1238	1516
Fairville	1451	1227	1455
Farmington	1476	1252	1498
Fulton*	1490	1216	1499
Geneva	1517	1327	1540
Hammondsport	1452	1265	1466
Hanover	1463	1303	NA
Lodi	1529	1358	1574
Niagara Falls*	1495	1276	1725
Penn Yan*	1565	1386	1606
Rochester*	1528	1424	1709
Sodus	NA	NA	NA
South Bristol	1450	1250	1477
Varick	1590	1399	1603
Versailles	1424	1290	1532
Williamson	1418	1187	1415

*Airport stations
** For other locations: http://newa.cornell.edu

Cornell Cooperative Extension
Cornell Vegetable Program

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VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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VegEdge is the highly regarded newsletter produced by the Cornell Vegetable Program. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell University and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.

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Cornell Cooperative Extension
Cornell Vegetable Program

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